

MEASURING AND LAYOUT DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to measuring instruments, and in particular to a measuring and layout device.

5        Measuring instruments are used to measure the configuration of areas in order to be able to produce a sheet item with the same dimensions as the areas. In the flooring industry, measuring instruments are used to measure the floor space of a room in order to be able to cut the carpet, vinyl, etc. to accurately fit the room. In the counter business, measuring instruments are used to measure the configuration of a counter in order to be able to cut a counter top to accurately fit the counter.

10        Heretofore, the measuring instruments and methods for measuring have included the use of paper patterns and the methods of square and measure, approximation, or cut in place. When a paper pattern is used to measure the dimensions of an area, a large sheet of paper is placed over the area, and the paper is cut to have the same dimensions as the area. The paper patterns, however, can only be used once for each measurement. Moreover, if the area is very large, a sizeable amount of paper can be used for each project adding up to a waste of resources over a period of time. The method of square and measure employs a carpenter square to measure the size of rectangles making up a polygonal room. The measurements of the rectangles are then reproduced on a sheet good and the sheet good is cut to the shape of the rectangles. The method of square and measure, however, only allows for measurements of areas made up of a plurality of rectangles. The method of approximation comprises approximating the size and shape of the area and the cutting the sheet good to that approximation. The sheet goods are then placed over the area and cut to fit the proper proportions. This method can be very time consuming and wasteful. The method of cut in place comprises placing the sheet good over the area and then cutting the sheet good to fit the area. This method can also be very time consuming.

25        Furthermore, the transportation of a large sheet good that has not been cut to proportion can be very expensive. Likewise, the method can be very wasteful because the remaining area of the sheet good has to be returned to the warehouse or other storage facility for the sheet good.

Accordingly, an apparatus solving the aforementioned disadvantages and having the aforementioned advantages is desired.

### SUMMARY OF THE INVENTION

5 One aspect of the present invention is to provide a measuring and layout device having a stationary member having a flat surface adapted to be marked on and an angle and distance device rotatably coupled to the stationary member. The angle and distance device includes a longitudinally and laterally rigid extendable tape that can be extended from a central point and that has an edge that facilitates reliably marking on the stationary member to form an accurate  
10 template as the angle and distance device is rotated and the tape is extended and retracted to critical features of an area.

Another aspect of the present invention is to provide a method of accurately cutting sheet goods including the steps of providing a template including a center point and feature location comprising angle and distance information relative to the center point, providing a sheet of  
15 material to be cut, placing the template on the sheet of material, providing an angle and distance device adapted to identify critical points on the sheet of material based on the feature location information, and cutting the sheet of material according to the critical points.

The principal objects of the present invention include providing a measuring and layout device that can be used for measuring a wide variety of patterns. The measuring and layout  
20 device provides simple construction and is compact in size. The measuring and layout device can be quickly and easily used for accurate measurements. The measuring and layout device also provides easy measurements for complex shapes. The measuring and layout device is efficient in use, economical to manufacture, capable of a long operable life, and particularly adapted for the proposed use.

25 These and other features, advantages, and objects of the present invention will be further understood and appreciated by those skilled in the art by reference to the following specification, claims and appended drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

30 FIG. 1 is a perspective view of the measuring and layout device of the present invention.

FIG. 2 is a side view of the measuring and layout device of the present invention.

FIG. 3 is a front view of the measuring and layout device of the present invention taken along the line 3-3 in FIG. 2.

FIG. 4 is an isometric exploded side view of the holder and tape of the present invention.

FIG. 5 is a top view of the measuring and layout device with a circular board of the present invention on an area to be measured.

FIG. 6 is a top view of the measuring and layout device with the circular board of the present invention on a sheet good for placement.

FIG. 7 is a top view of the measuring and layout device with a semi-circular board of the present invention on an area to be measured.

FIG. 8 is a top view of the measuring and layout device with the semi-circular board of the present invention on a sheet good for placement.

FIG. 9 is a perspective view of a second embodiment of the measuring and layout device of the present invention.

FIG. 10 is a perspective view of a third embodiment of the measuring and layout device of the present invention.

FIG. 11 is an isometric view of the tape with a pivotal pointer of a fourth embodiment of the measuring and layout device of the present invention.

FIG. 12 is a top view of the fourth embodiment of the measuring and layout device of the present invention on an area to be measured.

FIG. 13 is a top view of the fourth embodiment of the measuring and layout device of the present invention on a sheet good for placement.

FIG. 14 is a perspective view of a fifth embodiment of the measuring and layout device of the present invention.

FIG. 14A is a side view of a tape measure including a pinch-roller extender.

FIG. 15 is a schematic view of a method using a sixth embodiment of the measuring and layout device of the present invention.

FIG. 16 is a plan view of a template made from an alternative method where a constant pivot is not used.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes of description herein, the terms "upper," "lower," "right," "left," "rear," "front," "vertical," "horizontal," and derivatives thereof shall relate to the invention as orientated in Fig. 1. However, it is to be understood that the invention may assume various alternative orientations, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

The reference number 10 (FIGS. 1 and 2) generally designates a measuring and layout device embodying the present invention. The measuring and layout device 10 includes a stationary member 12 and an angle and distance device 15 rotatably connected to the stationary member 12. The angle and distance device 15 includes a longitudinally rigid and laterally rigid extendable tape 58 that facilitates reliably marking on the stationary member 12 to form an accurate template 20 as the angle and distance device 15 is rotated and the tape 58 is extended and retracted to critical features 88 of an area 22. As described in more detail below, the template 20 is used to record dimensions 21 of the area 22 and to mark the dimensions 21 on a sheet good 24 (FIG. 6), such as floor covering (e.g. vinyl), wall covering (e.g. paneling), or the like.

The illustrated stationary member 12 is a board or a thin panel. The stationary member 12 preferably has a substantially semi-circular configuration (FIG. 1) with a straight edge 13 between two circumferential ends 15 of the semi-circle. The straight edge 13 is preferably slightly shorter than the diameter of the semi-circle. It is contemplated that the stationary member 12 could have any shape depending on the area to be measured. For example, the stationary member 12 can have a circular (FIG. 5), square or rectangular configuration. The stationary member 12 includes a top surface 26 that can be erasably marked on. Alternatively, a sheet of paper can be attached to the surface 26 to be marked on. The illustrated stationary member 12 has non-slip feet 14 attached to a bottom surface 24 of the stationary member 12. Notably, these non-slip feet 14 are not needed in many applications. Where needed, the non-slip feet 14 are made of a friction-generating material that will prevent movement of the measuring

and layout device 10 once the measuring and layout device 10 is placed into position. When the surface to be measured can be scratched or where it has a tendency to be slippery, preferably, the non-slip feet 14 are suction cups made of non-marring material although pointed feet, rubber feet, or the like can also be used. The angle and distance device 15 is pivotally mounted to the top surface 26 of the stationary member 12 at the axis of the stationary member 12. Preferably, the angle and distance device 15 is pivotally connected to the stationary member 12 by a snap fastener 28 that allows the angle and distance device 15 to be removed from the stationary member 12. The snap fastener 28 also allows the angle and distance device 15 to rotate 360 degrees relative to the stationary member 12. Therefore, the angle and distance device 15 can be removed from a first stationary member and then attached to a second stationary member. The snap fastener 28 therefore allows the angle and distance device 15 to be used with several different stationary members 12. It is contemplated that a rivet could connect the angle and distance device 15 to the stationary member 12, thereby securely connecting the angle and distance device 15 to the stationary member 12.

As seen in Figures 1-3, the illustrated angle and distance device 15 includes a carrier 16 and a tape measure 18. The carrier preferably has a U-shaped cross-section with a first side wall 30, a second side wall 32 and a bottom wall 34 that connects the first side wall 30 and the second side wall 32. The snap fastener 28 is attached to the bottom wall 34 of the carrier 16, thereby connecting the carrier 16 to the stationary member 12. The illustrated tape measure 18 has a housing 35 that is removably operably supported on the carrier 16 between the first side wall 30 and the second side wall 32 above the bottom wall 34. The tape measure 18 is a commercially available tape measure of the type that has a spring-biased rewind, and has a belt clip 36 on one side. Preferably, the tape measure 18 is removably secured to the carrier 16 by inserting the first side wall 30 into the clip 36 attached to the housing 35. In an alternative embodiment, the housing 35 and the carrier 16 are integral. In the alternative embodiment, the tape measure 18 includes a replaceable tape 18 that is operably supported on the carrier 16 within the integral housing 35 and carrier 16.

In the illustrated example, the carrier 16 includes a tape measure extender 38. The tape measure extender 38 allows a single person to create the template 20 for the measurement and layout device 10. The tape measure extender 38 includes a top cross bar 40 that extends between and is pivotally attached to a front top portion of the first side wall 30 and the second side wall

32. The cross bar 40 can freely rotate relative to the carrier 16. A crank arm 42 located outside of the second side wall 32 extends transversely to and is operably connected to the cross bar 40. It is contemplated that the crank arm 42 could be located outside of the first side wall 30 and connected to the cross bar 40. A handle 44 is transversely attached to the crank arm 42 whereby the top cross bar 40 can be rotated by moving the handle 44 in a circle around the axis of rotation of the top cross bar 40. The crank arm 42 can rotate relative to the handle 44, thereby allowing rotation of the crank arm 42 without rotating the handle 44 relative to the carrier 16. A first pulley wheel 46 is attached to the top cross bar 40 adjacent to a top inside front portion of the second side wall 32. The tape measure extender 38 also includes a middle cross bar 48 that extends between and is attached to a front middle portion of the first side wall 30 and the second side wall 32. The middle cross bar 48 is located generally below the top cross bar 40. A tape roller 52 is located in the center of the middle cross bar 48 and has an integral second pulley wheel 54 adjacent the second side wall 32. The first pulley wheel 46 and the second pulley wheel 54 are aligned vertically and joined by a drive belt 56. Therefore, when the handle 44 of the crank arm 42 is moved in a circle around the axis of rotation of the top cross bar 40, the top cross bar 40 and the first pulley wheel 46 will rotate and thereby operate the drive belt 56. Consequentially, the second pulley wheel 54 and the tape roller 52 will rotate via the movement of the drive belt 56. A bottom cross bar 57 extends between and is attached to the front bottom portion of the first side wall 30 and the second side wall 32 generally below the middle cross bar 48. The bottom cross bar 57 can rotate freely relative to the carrier 16. The illustrated tape roller 52 has a convex outer circumferential surface 59 and the apex of the convex outer surface comes into contact with the bottom cross bar 57 when the tape measure 18 is not placed within the carrier 16. Therefore, the tape roller 52 and the bottom cross bar 57 will rotate in opposite directions when the handle 44 is rotated around the axis of rotation of the top cross bar 40.

The illustrated tape measure 18 includes tape 58 that is frictionally held between the tape roller 52 and the bottom cross bar 57 of the carrier 16. The tape 58 has an upper concave surface with approximately the same radius of curvature as the convex outer circumferential surface 59 of the tape roller 52. As a consequence of the tape roller 52 and the bottom cross bar 57 rotating in opposite directions, the tape 58 held between the tape roller 52 and the bottom cross bar 57 will extend from the carrier 16 when the tape roller 52 is rotated in the counter clockwise direction. Therefore, rotation of the handle 44 in the counter clockwise direction

around the axis of rotation of the top cross bar 40 of the tape measure extender 38 will cause the tape 58 to mechanically extend outwardly from the carrier 16, thereby allowing a single person to extend the tape 58 from the carrier 16 without leaving the locality of the carrier 16. In the illustrated embodiment, the tape 58 extends from a housing 35 placed into the carrier 16. Alternatively, the carrier 16 and the housing 35 can be integral and the tape 58 can be inserted into the integral housing 35 and carrier 16. Likewise, in an alternative embodiment, the tape 58 can be integral with the housing 35 and the carrier 16. Furthermore, the tape measure 18 preferably has a digital readout 55 on the top of the tape measure 18 for accurately giving the distance that the tape 58 is extended from the tape measure 18.

10 The illustrated carrier 16 also includes a front leg 60 extending parallel to the stationary member 12 from the bottom wall 34 of the carrier 16 adjacent the bottom cross bar 57. The front leg 60 is a rectangular plate with a width slightly larger than the width of the tape 58 and that extends approximately to the circumference of the circle or semi-circle of the stationary member 12. As described in more detail below, the front leg 60 is used to make the template 20.

15 An inner guide 62 is connected to a top 66 of the front leg 60 adjacent the tape roller 52. The inner guide 62 has a flat panel 64 with a pair of arms 68 that extend upwardly and at an angle away from the carrier 16 from opposite ends of an inner edge of the flat panel 64. A rotatable wheel 70 extends between each of the arms and the flat panel 64. The rotatable wheels 70 have a distance between them substantially equal to the width of the tape 58. The inner guide 62

20 functions to direct the tape 58 as the tape 58 extends from the carrier 16. The illustrated front leg 60 also has an outer guide 72 attached to the top 66 of a distal end 74 of the front leg 60. The outer guide 72 has the same configuration and functions in the same manner as the inner guide 62 to direct the tape 58 in a straight line from the carrier 16. In an alternative embodiment, the front leg 60 has a U-shaped cross section, with the tape 58 located within the U-

25 shaped cross section. The front leg 60 of the alternative embodiment only includes a pin at a distal end of the front leg 60 that extends between the two side walls of the U-shaped cross section. The pin is located above the tape 58 and holds the tape 58 within the side walls of the front leg 60.

In the illustrated example, the tape 58 (FIG. 4) has a downwardly projecting portion 81 of an L-shaped end 82 typically found on the tape measure 18. A holder 74 is attached to the downwardly projecting portion 81 of the L-shaped end 82 of the tape 58. The holder 74 is used

to securely hold a writing utensil 78, preferably a pencil, erasable marker, or crayon. The holder 74 has an upwardly opening bottom portion 80 that has a U-shaped cross-section and that receives the downwardly projecting portion 81 of the L-shaped end 82 of the tape 58. The U-shaped bottom portion 80 also <sup>has</sup> a flange 83 that is secured over a top portion 85 of the L-shaped end 82 of the tape measure 18, thereby securing the holder 74 to the tape measure 18 when the downwardly projecting portion 81 of the L-shaped end 82 is inserted into the U-shaped bottom portion 80. A cylinder 84 is attached to an outside wall of the U-shaped bottom portion 80 that faces away from the carrier 16. The inside diameter of the cylinder 84 is about the same as the outside diameter of the writing utensil 78 in order to frictionally hold the writing utensil 78 therein. Alternatively, the holder 74 only includes a cylinder 84 and is integrally attached to the end of the tape 58.

As seen in Figure 5, the measuring and layout device 10 is used by first choosing the appropriate stationary member 12. The carrier 16 is then snap-fit to the stationary member 12 by the snap-fastener 28. Thereafter, the non-slip feet 14 of the stationary member 12 are attached to the area 22 to be measured, thereby locking the stationary member 12 to the area 22. Preferably, the measuring and layout device 10 is clamped to the area 22 when the area 22 is a table top. Notably, the shape of the stationary member 12 can be other than semi-circular, and the measuring and layout device 10 can be placed anywhere on or near the area 22 to be measured. The area 22 to be measured can be a floor that needs to be carpeted or a counter that needs a top. The area 22 to be measured could also be a wall, and the measuring and layout device 10 can be used for obtaining dimensions of a wall, such as a window opening or the like. The tape measure 18 is then extended to a critical feature 88 on the area 22 to be measured. The critical feature 88 is defined as either a corner of the area 22, a point on an edge of an area 22 where the edge becomes non-linear or anywhere along the edge of an area 22 that is critical for measurement. The distance or dimension 21 from the measuring and layout device 10 to the critical feature 88 is then noted and written on the stationary member 12, thereby creating the template 20. In a preferred embodiment, a paper is placed over the stationary member 12 and around the carrier 16 to record the template 20. In another preferred embodiment, the template 20 is written directly onto the stationary member 12 wherein the stationary member is erasable. The template 20 is prepared by first drawing a line 98 along a straight edge 100 of the front leg 60 of the carrier 16. The distance 21 from the measuring and layout device 10 to the critical feature 88 is then written



next to the line 98 on the stationary member 12. In the illustration, the line 98 has been drawn, and the distance 21 (i.e. 175") has been written beside it. The distance 21 is measured from the critical feature 88 to a point on the tape 58, preferably determined by drawing a perpendicular mark on the line 21 aligned with and corresponding to a number on the tape 58 equal to the distance 21. The carrier 16 is then rotated again until the tape measure 18 is aligned with another critical feature 88 of the area 22 to be measured and the distance 21 is again noted and recorded on the template 20 as explained above. Notably, by extending the tape 58 to a second point in the middle or any other edge of the room and then reversing the measuring and layout device 10 end to end, additional measurements can be taken at the new location. This would allow someone to measure around blind corners in a room much like surveyors lay out a plot of land. It is contemplated that two different papers can be used for taking measurements at the two different room locations, or that different color markings can be made with the same paper to make a single template 20 having all of the information for the room with blind corners thereon.

As seen in Figure 6, the measuring and layout device 10 is used to measure sheet goods 24 for placement, and is used by securing the measuring and layout device 10 to the sheet goods 24 by the non-slip feet 14. The measuring and layout device 10 could also be placed near the sheet goods 24, if the stationary member 12 was placed near the area 22 to be measured. If the template 20 was written directly on the stationary member 12, the same stationary member 12 must be used to measure the sheet goods 24. If the paper was placed on the stationary member 12 to make the template 20, the paper can either be placed over another stationary member 12 of another measuring and layout device 10 or over the stationary member 12 of the same measuring and layout device 10. If the paper is used, only the paper has to be transported or faxed between the area 22 to be measured and the sheet goods 24. Once the measuring and layout device 10 is secured to the sheet goods 24, the template 20 is read backwards to draw the configuration of the area 22 to be measured. The template 20 is read backwards by first aligning the straight edge 100 of the front leg 60 with a first one of the lines 98 written to form the template 20. The tape measure 18 is then extended to the distance 21 noted on the template 20 and a distance mark 108 is drawn on the sheet goods 24. The carrier 16 is then rotated until the next line 98 is encountered. Once again, the straight edge 100 of the front leg 60 is aligned with the next line 98 and the tape measure 18 is extended to the distance 21 noted on the template 20 and the distance mark 108 is drawn on the sheet goods 24. After all of the distances 21 noted on the

template 20 have been marked on the sheet goods 24, the measuring and layout device 10 is removed from the sheet goods 24 and lines 110 are drawn between the distance marks 108 on the sheet goods 24 that were consecutively drawn on the sheet goods 24. The lines 110 connecting the consecutive distance marks 108 will have the same configuration as the area 22 to be measured. After all of the lines 110 are drawn between the distance marks 108 on the sheet goods 24, the sheet goods 24 are cut along the lines 110 thereby making the sheet good 24 with the same configuration as the area 22 to be measured. The sheet good 24 can then be placed over the area 22 to be measured and secured to the area 22 to be measured to form a cover.

As seen in Figure 7, if the stationary member 12 with the semi-circular configuration is used to make the template 20, the measuring and layout device 10 is used by first placing the straight edge 13 of the semi-circular stationary member 12 along a first edge 111 of the area 22. The carrier 16 on the semi-circular stationary member 12 is positioned on the stationary member 12 whereby a back end 61 of the carrier 16 or tape measure 18 does not extend beyond the straight edge 13 of the stationary member 12 while the carrier 16 is rotated around the snap fastener 28. Therefore, the template 20 can be made when the straight edge 13 of the stationary member 12 is placed next to a wall along an edge of the area 22 to be measured. The template 20 is created by rotating the carrier 16 to point towards the critical feature 88'' along the first edge 111 of the area 22 distal from the stationary member 12. The line 98 is then drawn, and the distance 21 is written beside the line 98. The carrier 16 is then rotated further along the semi-circle until the tape measure 18 is aligned with another critical feature 88''' of the area 22 to be measured and the distance 21 is again noted and recorded on the template 20 as explained above. The template is completed by marking all of the lines 98 and distances 21 of critical features 88 of the area.

As seen in Figure 8, the measuring and layout device 10 with the semi-circular configuration is used to measure sheet goods 24 for placement by securing the measuring and layout device 10 to the sheet goods 24. A line 102 is then drawn along the straight edge 13 of the semi-circular stationary member 12 to the end 15 of the semi-circle that was aligned with the critical feature 88'. Alternatively, the straight edge 13 is aligned with a pattern or feature on the sheet goods (such as carpet weaving or a straight edge of bulk goods). The distance mark 108 is drawn on the sheet goods 24 at the end 15 of the semi-circle. The template 20 is then read backwards as described above for all of the critical features 88 and the distance marks 108 are

drawn on the sheet goods 24. As described above, the measuring and layout device 10 is then removed from the sheet goods 24 and lines 110 are drawn between the distance marks 108 on the sheet goods 24 that were consecutively drawn on the sheet goods 24. The sheet goods 24 are then cut along the lines 110 and placed over the area 22 to be measured and secured to the area 22 to be measured to form a cover. It is contemplated that the method of using the measuring and layout device with the semi-circular stationary member 12 to create a template 20 and measure sheet goods 24 as described directly above could also be used with any stationary member 12.

The reference numeral 10a (FIG. 9) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10a is similar to the previously described measuring and layout device 10, similar parts appearing in FIG. 1 and FIG. 9, respectively, are represented by the same, corresponding reference number, except for the suffix "a" in the numerals of the latter. In the measuring and layout device 10a, the carrier 16a does not include a front leg 60. The tape 58a of the tape measure 18a is resilient and has a pair of well-defined hard edges 112. The first resilient edges 112 of the measuring and layout device 10a take the place of the straight line 100. Therefore, the lines 110a drawn on the template 20a are drawn along the resilient edges 112.

The reference numeral 10b (FIG. 10) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10b is similar to the previously described measuring and layout device 10, similar parts appearing in FIG. 1 and FIGS. 10, respectively, are represented by the same, corresponding reference number, except for the suffix "b" in the numerals of the latter. The measuring and layout device 10b is not connected to a stationary member 12. Therefore, the carrier 16b is placed directly on the template 20b and rotated under the center of the carrier 16b in order to make the template 20b. The template 20b is therefore preferably written on a piece of paper.

The reference numeral 10c (FIG. 11) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10c is similar to the previously described measuring and layout device 10, similar parts appearing in FIGS. 4, 7 and 8 and FIGS. 11-13, respectively, are represented by the same, corresponding reference number, except for the suffix "c" in the numerals of the latter. In the measuring and layout device 10c a pivotable pointer 116 is attached to the end of the tape 58c of the tape

measure 18c instead of the holder 74. The pivotable pointer 116 is attached to the top of the tape 58a by a pivot 119. The pivotable pointer 116 has a first portion 118 with a point 120 at a distal end 122 and a second portion 124 at a near end 126. The second portion 124 of the pivotable pointer 116 has a width approximately equal to the width of the tape 58c. A piece of white tape 116' or markable surface is placed on tape 58c. When the pointer 116 is pivoted away from an aligned position, its angle is marked on the white tape 116' including a notation, and the same notation is written on template 20c. The template 20c for the measuring and layout device 10c is written on the stationary member 12c as described above.

As seen in Figure 12, the measuring and layout device 10c is used by first placing the straight edge 13c of the semi-circular stationary member 12c along a first edge 126 of the area 22c. The tape 58c is then extended to a first critical feature 128 of the area 22c, with the point 120 touching the first critical feature 128. When the first critical feature 128 is measured, the second portion 124 of the pivotable pointer 116 is directly above and aligned with the tape 58c. The distance 21c and the line 98c are then written on the template 20c on the stationary member 12c as described above. The tape 58c is then rotated to a second critical feature 130 of the area 22c, with the point 120 touching the second critical feature 128. Once again, the distance 21c and the line 98c is written on the template 20c on the stationary member 12c with the second portion 124 of the pivotable pointer 116 above and aligned with the tape 58c. Thereafter, the tape 58c is rotated to meet a second edge 131 of the area 22a. The pivotable pointer 116 is rotated so that a first straight edge 132 of the pivotable pointer 116 is aligned with the second edge 130. The distance 21c and the line 98c of the blade 58c to the first straight edge 132 are then written on the template 20c on the stationary member 12c as described above. The tape 58c is then finally rotated to meet a third edge 136 of the area 22a. The pivotable pointer 116 is once again rotated so that a second straight edge 133 of the pivotable pointer 116 is aligned with the third edge 136. Furthermore, the distance 21c and the line 98c of the blade 58c to the second straight edge 133 are then written on the template 20c on the stationary member 12c as described above.

As seen in Figure 13, the measuring and layout device 10c is used to measure sheet goods 24c by first placing the semi-circular stationary member 12c on the sheet goods 24c. A line 140 is then drawn on the sheet goods 24c along the straight edge 13c. Thereafter, the template 20c is read backwards as described above and distance marks 108c are marked at the



and layout device 10e, the angle and distance device 15e is an electronic angle and distance measuring device 15e. The electronic angle and distance measuring device 15e electronically measures feature location information including the angles and distances from a predetermined point to the critical features 88e of the area 22e to be measured. As seen schematically in Figure 5 15, the measuring and layout device 10e is used by first placing the template 20e with a center point on the area 22e to be measured. The electronic angle and distance measuring device 15e is then used to create the template 20e by measuring the angles and the distances from the center point to the critical features 88e of the area 22e. The angles and distances to the critical features 88e are then recording on the template 20e. A sheet 24e of material to be cut is then obtained 10 and the template 20e is placed on the sheet 24e of material. The angle and distance device 20e is then provided in order to identify the critical features 88e from the area 22e on the sheet <sup>the</sup> 22e of material based on the feature location information. Finally, the sheet 24e of material is cut according to the critical features 88e.

Fig. 16 discloses a modified method where a tape measure 181 having a longitudinally and laterally rigid tape 182 is placed angularly and randomly on a flat sheet 180. The tape measure 181 is extended and markings are placed on the flat sheet 180. The markings include a line for direction, a mark for distance, and the distance measured for showing a room 183.

In the forgoing description, it will be readily appreciated by those skilled in the art that modifications may be made to the invention without departing from the concepts disclosed herein. For example, a tape measure extender 38 is not required to use the measuring and layout device 10. The measuring and layout device 10 could be used by one person without the tape measure extender, but the person would have to move from the measuring and layout device 10 to the critical feature and back to the measuring and layout device 10 for each measurement taken. Furthermore, it is understood that the different embodiments of the measuring and layout device 10 can be combined or substituted. For example, the measuring and layout device 10 without a stationary member 12 can also be used without a front leg 60. Also, it is contemplated that a scope of the present invention includes a modified device having a light/laser-based distance measuring device or an optical distance measuring device instead of a tape measure. Also, it is contemplated that the markings on the tape can be optically read or displayed on an LED display, or the markings on a tape can be replaced by a reader that measures extension of the tape and that displays or prints out the extension data. The reader can also potentially be programmed to

automatically record angles and dimensions of tape extension to the critical room features at the respective angles. It is known in the art how to manufacture such readouts, optical readers, displayers, printers, and information recorders, such that these items do not need to be described herein for a person of ordinary skill to the present invention. Further, it is noted that the present method will work even without the tape measure being pivoted to the stationary member at a hard pivot. (See Fig. 16). It is contemplated that the template could be a picture as well as an outline, and that the present device can be used to draw the picture or outline. For example, the picture-type template could be a basketball court, a driveway, a hopscotch pattern or a cartoon character. Such modifications are to be considered as included in the following claims, unless these claims by their language expressly state otherwise.